

APPLICATION

OF

JOHN A. SALENTINE
AND KENNETH S. COLLIN, JR.

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ON

TETHERING SYSTEM FOR PERSONAL ELECTRONIC DEVICES

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PATENT

5 **TETHERING SYSTEM FOR PERSONAL ELECTRONIC DEVICES**

 This application claims the benefit of provisional application number 60/459,777 to Salentine et al., which was filed on April 1, 2003.

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BACKGROUND OF THE INVENTIONField of the Invention

 The present invention relates to securing hand held
15 personal articles and more particularly for tethering personal electronic devices such as cell phones, pagers and PDA's.

Description of the Related Art

20 Personal hand held electronic devices such as cell phones, pagers, and PDA's have become very popular in recent years. These devices are designed to be highly portable and capable of being carried by their owners throughout the day. When not in use, it is desirable to
25 keep these devices conveniently within arms reach while at the same time not having to hold the devices. They can be held on the owner's body by a clip mount, holster or storage pocket. For example, cell phones made by Nokia can come with a clip mount that attaches to the user's belt or

waste band and has a notch that mates with a pivoting ball on the back of the phone. The ball is inserted within the notch and the ball and notch combination holds the phone to the clip mount.

5 One disadvantage of most conventional clip mounts, holsters and storage pockets, is that the electronic device that they are holding can be jarred loose and fall to the ground where it can be lost or damaged. Also, when the electronic devices are removed from their clip mount,
10 holster or storage pocket for use, they can be dropped. This can also result in the devices being lost or damaged.

Retractable tether apparatuses are available that have a line/tether that can be pulled from the apparatus' housing and when released, the line/tether automatically
15 retracts into the housing. These apparatuses can be used with hand held electronic devices to prevent them from falling to the ground if they are dropped or jarred loose. One such device is disclosed in U.S. Patent No. 5,938,137 to Poulson and comprises a leash attached to the cell phone
20 case and a spring retractable leash cord in a housing pivotally attached to the user's belt. This arrangement helps prevent dropping and damage to a cell phone in a case clipped to the belt. The leash housing is pivotally attached to a locking belt hook that cannot easily be
25 accidentally removed.

One disadvantage of these apparatuses is that they comprise a separate device that is usually mounted to user adjacent to the mounting point for the electronic device. This results in an additional device that is mounted to the
30 body, that is then attached to the electronic device that is also mounted to the body by a separate clip mount,

holster or storage pocket. This arrangement can be bulky and difficult to use.

U.S. Patent No. 6,206,257 discloses a swivel belt clip with bi-directional action, comprising a releasable holder for a portable communication device that includes a base clip adapted to secure to a belt in a horizontal orientation. An article clip is secure to a portable communication device. The base clip includes a channel and a locking tab extends into an opening in the channel bottom. Two user engageable release tabs adjacent the channel opposite ends are adapted to move the locking tab in response to movement of one release tab toward the other. The article clip includes a locking head adapted to slide in the channel, with the locking head adapted to receive the locking tab when the two are aligned to hold the article in the clip. Movement of the release tabs disengage the locking tab from the locking head so that the article can be removed from the clip.

SUMMARY OF THE INVENTION

One embodiment of a tethering system according to the present invention comprises a tether housing having an internal tether that is extendable from the tether housing under a pulling force and retracts into said tether housing when the pulling force is removed. A mounting apparatus is included that is integral to the tether housing and arranged to mount the tether housing. A holstering system is included and is integral to the tether housing and arranged to allow a personal device to be mounted to the tether housing with the tether attached to the personal device. The tether is extendable to allow use of the

personal device while also preventing the personal device from falling to the ground when the tether housing is mounted.

Another embodiment of a tethering system according to the present invention comprises a housing having front and back surfaces and a tether internal to the housing. A spring is also internal to the housing and arranged to allow the tether to be extended from the tether housing against the force of the spring, with the spring urging the tether to retract into the housing. A mounting apparatus is included on the back surface of the tether housing and is arranged to mount the tether housing to a person. A holstering system is included on the front surface of the tether housing and arranged to allow a personal device to be mounted to the tether housing with the tether attached to the personal device. The tether is extendable to allow use of the personal device by the person. The spring and tether also prevents the personal device from falling to the ground.

These and other further features and advantages of the invention will be apparent to those skilled in the art from the following detailed description, taken together with the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of a security tethering system according to the present invention;

FIG. 2 is another perspective view of the security tethering system in FIG. 1; and

FIG. 3 is a perspective view of another embodiment of a security tethering system according to the present invention;

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FIG. 4 is a perspective view of the internal components of one embodiment of a security tethering system according to the present invention; and

10 FIG. 5 shows the internal components of one embodiment of a retractable tether apparatus according to the present invention.

DESCRIPTION OF THE INVENTION

15 The present invention provides an improved security-tethering system that can be used in many different applications, but is particularly adapted for use with hand held personal electronic devices. FIGs. 1 and 2 show one
20 embodiment of a new security tethering system 10 according to the present invention that generally comprises a retractable tether apparatus 12 that is integral with a hand-held electronic device holstering system 14. The system also has an integral belt or waste band attachment element, to mount the system 10 to a belt or waste band,
25 with the preferred attachment element being a belt clip.

In the tethering system 10, the holstering attachment 14 can be arranged in many different ways and as shown in FIGs. 1 and 2, generally comprises an elevated slot sized to hold a pivoting ball within the slot. This type of
30 arrangement is similar to the holstering attachment in Nokia type mounting systems that are known in the art. The holstering attachment is compatible with the pivoting ball

that is typically attached on the back of Nokia phones as part of the phone's holstering system. It should be understood that many different holstering attachments could also be used with different security tethering systems in accordance with the present invention.

The system's retractable tether apparatus 12 has a housing 16 that houses the line/tether ("tether") that protrudes from the housing through opening 17. The housing 16 also includes an internal spring that biases the tether to retract back into the housing 16. A lanyard attachment 18 (shown in FIG. 2) is attached to the end of the tether to prevent the tether from fully retracting into the housing 16. The tether can be pulled and extended from the housing 16 against the bias of the internal spring, and automatically retracts into the housing 16 when the pulling force is released.

As shown in the embodiment of FIG. 2, the lanyard attachment 18 can retract with the tether until it abuts against the housing 16. The side of the housing 16 opposite the holstering system 14 comprises a clip 19 for mounting the tethering system 10 to a user, such as to the user's belt, top of the user's pants or to one of the user's pockets. It should be understood, however, that many different mounting mechanisms can be used to mount the tethering system to many different locations on a user.

It can be appreciated that tethering systems according to the present invention incorporate a retractable tether apparatus 12 and electronic device holstering system 14 in one assembly, with the holstering system 14 being integral with one of the surfaces of the retractable tether's housing 16. The tethering system 10 can be mounted on the user's belt or waste band and an electronic device can be

mounted to the holstering system 14 so that the electronic device is securely mounted to the tethering system 10. The tether from the retractable tether apparatus 12 is attached to the electronic device and retracts from the tether housing 16 when the electronic device is in use. If the electronic device is dropped during use or is jarred from the holstering system 14, the tether does not retract from the tether apparatus 12 under the weight of the electronic device. This prevents the electronic device from falling to the ground. By incorporating the holstering system and tether into one device, a tethering system is provided that is less bulky and easier to use.

FIG. 3 shows a personal electronic device 20 mounted to a tethering system according to the present invention, with the tethering system mounted to a user's belt 22. The tethering system is hidden between the electronic device 22 and the user with a lanyard loop 24 running from the lanyard attachment 26 to the electronic device 20. In other embodiments according to the present invention, the electronic device 22 can connect directly to the lanyard attachment 18. The lanyard loop 24 can be a string, rope or other length of flexible and durable material that is attached at one end to the lanyard attachment 18 and at the other end to the electronic device 20, which in this case is a cell phone. An attachment ring 28 can be included on the electronic device 20 as the attachment point for the lanyard loop 24.

The lanyard loop 24 provides for a section of line between the electronic device 20 and lanyard attachment 18 so that the tether can be in its fully retracted position when the electronic device 20 is mounted to the system 10, while at the same time not placing tension on lanyard loop

24. This allows the electronic device 20 to be mounted to the tethering system without placing stress on the tether or lanyard attachment 18 and not pulling the electronic device 20 from the holstering system on the tethering system housing. This makes the system 10 easier and more convenient to use and extends the life of the system components.

The lanyard loop 24 can be attached to the electronic device in different ways such as to a ring on the device's protective case, or directly to the pivoting ball connector type mount. In electronic devices that do not have these attachment features, the lanyard loop 24 can be attached in other ways according to the present invention.

Referring again to FIGs. 1 and 2, tethering systems according to the present invention allow personal electronic devices to be easily and conveniently used, while at the same time providing an arrangement that securely attaches the phone to a user when it is not in use. For example, the tethering system can be mounted to the user's belt clip 19 with holstering attachment 14 on the outside surface of the housing 16. The personal electronic device, such as a cell phone, can include a pivoting ball on its back surface that is compatible with the holstering attachment 14. The electronic device is then mounted to the system 10 by mating the pivoting ball with the holstering attachment 14. The cell phone is held out of the way while still being within arms reach. If the cell phone is jarred from the holstering attachment 14, the weight of the cell phone will not retract the tether and the cell phone hangs from the system 10 by the lanyard loop 20. This arrangement prevents the device from falling to the ground.

The holstering system 14 can also include a holds pin, which is known in the art and is arranged to holds the pivoting ball within the holstering system 14. To remove the cell phone from the holstering system 14 for use, a lever on the attachment 14 is activated to retract the pin and release the pivoting ball. The phone can then be removed from the holstering system 14 and pulled to the user's ear. The tether is pulled from the retractor housing 16 under the pulling force, but the tension required to extend the tether is not so great that it interferes with the use of the phone. If the phone is dropped at any point during is use, the tether prevents it from falling to the ground. When the phone is done being used it is moved back to the tethering system 10 where it can be remounted in the holstering system 14. The tether automatically retracts into the housing. When not in use, the device is securely mounted to the front of the tethering system.

During use of the tethering system 10 the lanyard attachment 18 and tether extend upward from the housing, which is particularly convenient for devices that are used above the mounting point of the system 10, such as with cell phones. In other embodiments, the line/tether can protrude outward from the housing and away from the user, which is particularly convenient for devices used at approximately the same height as the mounting point for the tethering system 10. For example, when a PDA is used it is held in front of the user, which can be more compatible with an outward protruding tether. The tethering system 10 can also include a disconnect means so that the electronic device 22 can be detached from the lanyard attachment 18. In another embodiment, the tethering system 10 is arranged so that it can also rotate about the user's belt or waste

band by the clip 19.

FIG. 4 shows another embodiment of a tethering system 40 according to the present invention that is similar to the system 10 and has a housing 42, belt or waste band attachment element 44, tether and lanyard attachment (not shown). The pin used for retaining the pivoting ball in the Nokia type holstering attachment 14 shown in FIGs. 1 and 2 can be damaged if the cell phone is jarred when it is mounted to the system 10. To address this problem, the tethering system 40 includes a holstering system 46 that is different from the Nokia type holstering attachment 14.

The holstering system 46 is U-shaped and sized to fit the same pivoting ball used for the Nokia type holstering attachments. It is, however, longer than the Nokia type attachments and does not have a retaining pin. The holstering system 46 has three mounting points to the housing 42 with the first and second mounting points 48, 50 near the base of holstering system 46, and the third attachment point 52 being at one of the legs of the holstering system 46. The other leg 54 is not attached to the housing 42, but instead serves as a "living hinge" to hold the pivoting ball in the holstering system 46. As the pivoting ball passes into the attachment 46 the pivoting ball forces the leg 54 to flex out, increasing the size of the opening in the holstering system 46. As the pivoting ball passes through the opening, the leg 54 flexes back in, reducing the size of the opening. This reduction in the size of the opening helps hold the cell phone in the holstering system 46 when the cell phone is not in use. If the jarring force is great enough to force the pivoting ball past the leg 54, the holstering system 46 will not be

damaged and the tether prevents the phone from falling to the ground.

5 Tethering system 10 and 40 also include a ratchet lock system that allows the tether to be retracted and held at its retracted length with no retracting bias on the tether. To release the tether so that it retracts, it is pulled, which releases the ratchet lock. The housings 16 and 42 each include a ratchet lock on/off lever 19, 55 that allows for the user to disable the ratchet locking system. When 10 the system is disabled, the bias remains on the tether when the phone is in use.

FIG. 5 shows the internal components of one embodiment retractable tether system 60 according to the present invention that is similar to tether system 10 shown in 15 FIGS. 1 and 2. It generally comprises first and second housing halves 62, 64 that are mounted together to form the tether housing. A reel 66 is included in the housing upon which the tether winds under the bias and internal spring. The system 60 also includes a ratchet locking lever 68 20 arranged to operate a ratchet locking system 70. A holstering attachment 72 is mounted to the first housing half 62 by mounting screws 74.

Although the present invention has been described in considerable detail with reference to certain preferred 25 configurations thereof, other versions are possible. As described above, different holstering attachments can be used with different electronic devices. Also, different retractable tether apparatus can be used in accordance with the present invention. Therefore, the spirit and scope of 30 the invention should not be limited to the preferred versions in the specification.